Estimating the global public health implications of electricity and coal consumption.

published by jgohlke on Mon, 08/19/2013 - 3:02pm

Estimating the global public health implications of electricity and coal consumption.

Title

Estimating the global public health implications of electricity and coal consumption.

Publication Type

Journal Article

Year of Publication

2011

Authors

Gohlke, JM, Thomas, R, Woodward, A, Campbell-Lendrum, D, Prüss-Üstün, A, Hales, S, Portier, CJ

Journal

Environ Health Perspect

Volume

119

Issue

6

Pagination

821-6

Date Published

2011 Jun

ISSN

1552-9924

Keywords

Air Pollution, Coal, Electric Power Supplies, Greenhouse Effect, Humans, Infant, Infant Mortality, Life Expectancy, Models, Biological, Public Health, Risk Assessment

Abstract

BACKGROUND: The growing health risks associated with greenhouse gas emissions highlight the need for new energy policies that emphasize efficiency and low-carbon energy intensity.

OBJECTIVES: We assessed the relationships among electricity use, coal consumption, and health outcomes.

METHODS: Using time-series data sets from 41 countries with varying development trajectories between 1965 and 2005, we developed an autoregressive model of life expectancy (LE) and infant mortality (IM) based on electricity consumption, coal consumption, and previous year's LE or IM. Prediction of health impacts from the Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS) integrated air pollution emissions health impact model for coal-fired power plants was compared with the time-series model results.

RESULTS: The time-series model predicted that increased electricity consumption was associated with reduced IM for countries that started with relatively high IM (> 100/1,000 live births) and low LE (< 57 years) in 1965, whereas LE was not significantly associated with electricity consumption regardless of IM and LE in 1965. Increasing coal consumption was associated with increased IM and reduced LE after accounting for electricity consumption. These results are consistent with results based on the GAINS model and previously published estimates of disease.
burdens attributable to energy-related environment factors, including indoor and outdoor air pollution and water and sanitation.

**CONCLUSIONS:** Increased electricity consumption in countries with IM < 100/1,000 live births does not lead to greater health benefits, whereas coal consumption has significant detrimental health impacts.

DOI 10.1289/ehp.1002241
PubMed ID 21339091
PubMed Central ID PMC3114817